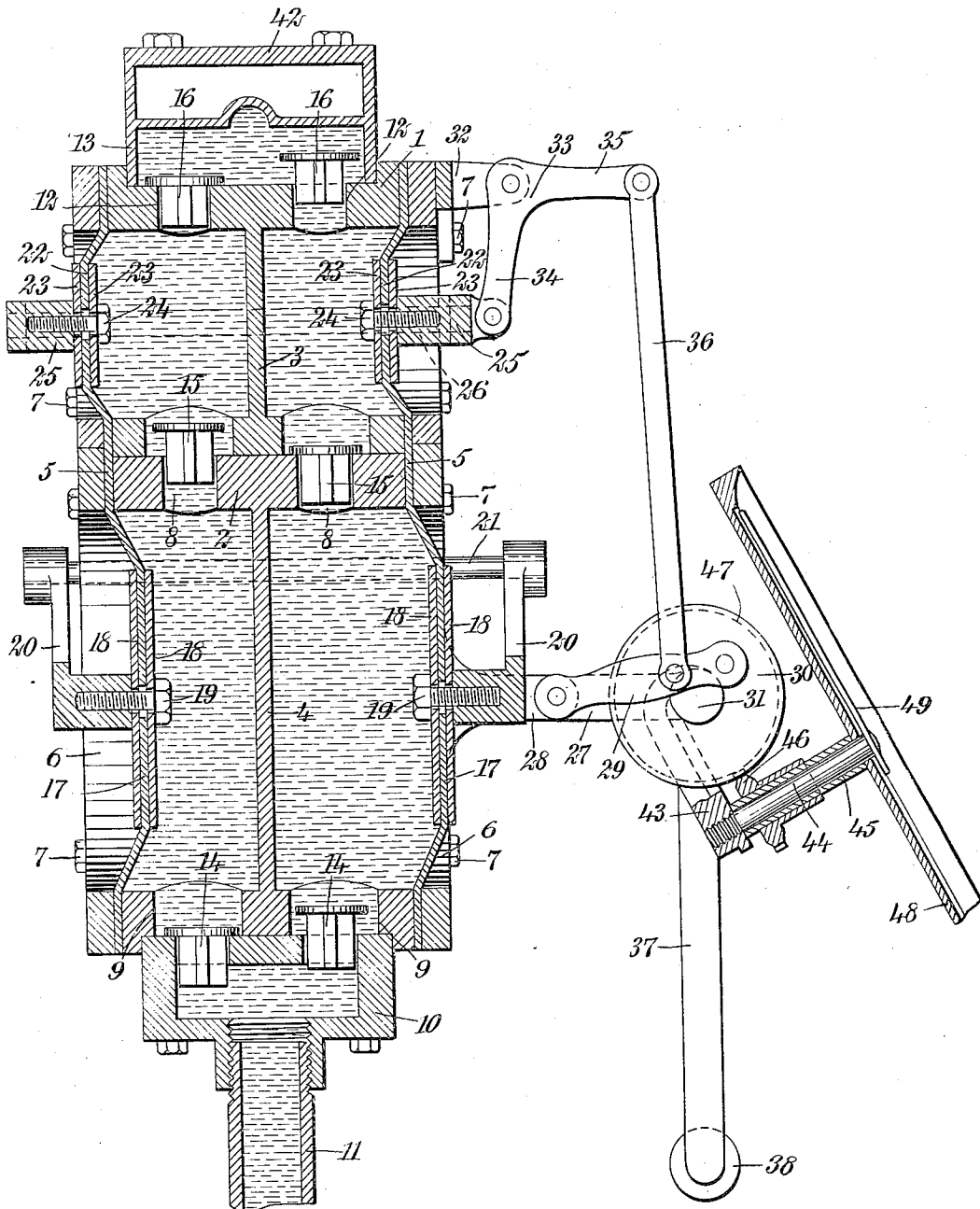


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COMPUTING PUMP.

APPLICATION FILED DEC. 3, 1907.

936,069.

Patented Oct. 5, 1909.



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STANLEY G. WISE AND JOSEPH E. TROYER, JR., OF GAS CITY, AND JASPER E. SMISOR,
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COMPUTING-PUMP.

936,069.

Specification of Letters Patent.

Patented Oct. 5, 1909.

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To all whom it may concern:

Be it known that we, STANLEY G. WISE and JOSEPH E. TROYER, JR., citizens of the United States, and residents of Gas City, in the county of Grant and State of Indiana, and JASPER E. SMISOR, a citizen of the United States, and a resident of Marion, in the county of Grant and State of Indiana, have invented a new and Improved Computing-Pump, of which the following is a full, clear, and exact description.

This invention relates to computing pumps, and more particularly to pumps designed to be used in dispensing and selling fluids such as oil, and the like.

The invention consists in the construction and combination of parts to be more fully described hereinafter and particularly set forth in the claims.

Reference is to be had to the accompanying drawing forming a part of this specification, in which a longitudinal cross section of the improvement is shown.

Referring to the drawing, we provide a casing 1, comprising substantially cylindrical sections separated by a dividing wall 2. The sides of the casing are open. Each of the sections consists of a pair of chambers formed by partitions 3 and 4 integral with the casing. A sheet 5 of flexible material such as rubber, fabric or the like, is arranged at each of the open sides of the casing and is held in position by means of frames 6 corresponding in form substantially to that of the casing. The frames 6 are rigidly secured to the casing by means of screws or bolts 7. The flexible material at each of the chambers forms a diaphragm, for a purpose which will appear hereinafter. The dividing wall 2 is provided with valve openings 8 therethrough, effecting communication between the corresponding chambers of the pairs of chambers formed within the casing. Near the bottom of the lower pair of chambers, the casing wall has valve openings 9 communicating with openings of an inlet chamber 10. An inlet pipe 11 permits a fluid to enter the inlet chamber 10. The casing wall near the top of the second pair of chambers has valve openings 12 which communicates with an outlet chamber 13. The inlet chamber and the outlet chamber are secured to the casing walls in any suitable manner. One-way valve disks 14, 15 and 16 are arranged in the openings

9, 8 and 12 respectively and permit the fluid to flow through these openings in one direction, only.

The diaphragms 17 of the lower chambers have at the opposite sides face-plates 18 extending nearly to the edges of the diaphragms, and serving to brace the same. Screw bolts 19 extend through suitable openings of the face-plates and the diaphragms and serve to secure arms 20 rigidly to the diaphragms. The arms 20 are joined rigidly together by means of rods 21. In this way the diaphragms are coupled and are constrained to operate together. The diaphragms 22 of the upper chambers have similar bracing face-plates 23. Screw bolts 24 arranged in suitable openings of the diaphragms 22 and the face-plates 23 serve to secure arms 25 rigidly to the diaphragms 22. The arms 25 are joined by means of rods 26 which serve rigidly to couple the diaphragms 22 together and constrain them to operate simultaneously. A yoke bracket 27 is mounted at one side of the casing and extends across one of the diaphragms 17. One of the arms 20 is guided to move upon the bracket 27, and has an extension 28 to which is pivotally secured an end of a link 29. The opposite end of the link 29 is pivotally secured to a crank disk 30 revolvably mounted upon a shaft 31 carried by an extension of the bracket 27. The casing carries near the upper portion, a second bracket 32 upon which is pivoted a bell crank lever 33. One arm 34 of the lever is pivotally secured to one of the arms 25. The other arm 35 of the bell crank lever is pivotally connected by means of a second link 36 with the first link 29. The shaft 31 has a hand crank 37 provided with a handle 38, and permitting the manual operation of the shaft 31. When the crank disk 30 is turned by means of the hand crank, the diaphragms 17 are reciprocated by means of the link 29. As the diaphragms are rigidly coupled together they operate simultaneously but in opposite directions with regard to their respective chambers. At the same time, the movement of the shaft 31 through the link 36 and the bell crank lever, is transmitted to the diaphragms 22 and causes them to operate simultaneously, though in opposite directions with regard to the respective chambers of each. Furthermore, the pairs of diaphragms move simultaneously in opposite

directions. The result of this arrangement is that while the diaphragm of one of the lower chambers is moving outwardly to draw the fluid into that chamber, the corresponding diaphragm of the upper chamber is moving inwardly to expel the fluid from the upper chamber. Similarly the other of the lower chambers is being emptied of fluid by its diaphragm while that fluid is being drawn into the corresponding upper chamber by the diaphragm of the latter.

Above the outlet chamber 13 is a vacuum chamber 42. The chambers 13 and 42 are connected with a discharge spout (not shown) so that when the flow of fluid is stopped, dripping from the spout is prevented.

A support 43 is carried by the bracket 27 adjacent to the crank disk 30. A spindle 44 is rigidly mounted upon the support 43 and has a sleeve 45 loosely mounted thereupon. A worm wheel 46 is arranged upon the sleeve 45 and is free to rotate thereupon. The crank disk 30 is peripherally formed into a worm 47, which meshes with the worm wheel 46. A computing dial 48 is rigid with the sleeve 45 and is arranged upon the spindle 44. The latter projects through a central opening of the dial and carries an indicating member or pointer 49. When the crank disk 30 is rotated it turns the computing dial 48 through the worm wheel 46, which, while free to move upon the sleeve 45, has a frictional engagement therewith which is sufficient to cause the sleeve to turn with the worm wheel.

It will be understood that the adjustment of the parts of the pumping mechanism must be regulated to correspond to the graduations of the computing mechanism. For instance, when 1 gallon of the fluid is pumped by the pumping mechanism, 1 gallon is registered by the computing mechanism. The arrangement is such that when one gallon of fluid has been forced through the casing, the dial has made a complete revolution.

Having thus described our invention, we claim as new, and desire to secure by Letters Patent:—

1. A pump, comprising a casing having open sides and provided with a horizontal partition and vertical partitions, dividing the casing into upper and lower pairs of chambers, each chamber having a valved inlet and a valved outlet and the chambers of the lower pair each having a valved connection with a chamber of the upper pair, sheets

of flexible material closing the open sides of the casing and forming diaphragms, one for each chamber, an arm secured to each diaphragm, a rod connecting the arms of the diaphragms of the upper chambers, a rod connecting the arms of the diaphragms of the lower chambers, a link pivoted to an arm of one of the lower diaphragms, means for reciprocating the link, a bell crank lever pivoted to the casing and having one member pivoted to an arm of one of the upper diaphragms, and a link connecting the other member of the bell crank lever with the first named link.

2. A pump, comprising a casing having open sides and provided with horizontal and vertical partitions dividing it into upper and lower pairs of chambers, each chamber having a valved inlet and a valved outlet and the chambers of the lower pair each having a valved connection with a chamber of the upper pair, sheets of flexible material closing the open sides of the casing and forming diaphragms one for each chamber, means for connecting the diaphragms of the chambers of each pair of chambers together, and means for simultaneously operating the diaphragms of the pairs of chambers in opposite directions.

3. A pump, comprising a casing having horizontal and vertical partitions dividing it into upper and lower pairs of chambers, each chamber being open at one side and having a valved inlet and a valved outlet and the chambers of the lower pair each having a valved connection with a chamber of the upper pair, a diaphragm closing the open side of each chamber, means for connecting the diaphragms of each pair of chambers together, means for simultaneously operating the diaphragms of the pairs of chambers in opposite directions, inlet and outlet chambers at opposite ends of the casing and with which the pairs of chambers communicate, an outlet tube leading from the outlet chamber, and an inlet pipe leading from the inlet chamber.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

STANLEY G. WISE.
JOSEPH E. TROYER, Jr.
JASPER E. SMISOR.

Witnesses:

JAMES Q. MANN,
OMER F. PARKER.